

**Project Management Indicator Species Report
For
Tule River Reservation Protection Project**

Western Divide Ranger District

Sequoia National Forest and Giant Sequoia National Monument

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1. Introduction

The purpose of this report is to evaluate and disclose the impacts of the Tule River Reservation Protection Project (TRRP Project) on the habitat of the thirteen (13) Management Indicator Species (MIS) identified in the Sequoia National Forest (SQF) Land and Resource Management Plan (LRMP) (USDA 1988) as amended by the Sierra Nevada Forests Management Indicator Species Amendment (SNF MIS Amendment) Record of Decision (USDA Forest Service 2007a) and by the 2012 Giant Sequoia National Monument Management Plan (USDA 2012). This report documents the effects of the proposed action and alternatives on the habitat of selected project-level MIS. Detailed descriptions of the TRRP Project alternatives are found in the Tule River Reservation Protection Project Draft Environmental Impact Statement (USDA Forest Service 2013).

MIS are animal species identified in the SNF MIS Amendment Record of Decision (ROD) signed December 14, 2007, which was developed under the 1982 National Forest System Land and Resource Management Planning Rule (1982 Planning Rule) (36 CFR 219). Guidance regarding MIS set forth in the SQF LRMP as amended by the 2007 SNF MIS Amendment ROD directs Forest Service resource managers to (1) at project scale, analyze the effects of proposed projects on the habitat of each MIS affected by such projects, and (2) at the bioregional scale, monitor populations and/or habitat trends of MIS, as identified in the SQF LRMP as amended.

1.a. Direction Regarding the Analysis of Project-Level Effects on MIS Habitat

Project-level effects on MIS habitat are analyzed and disclosed as part of environmental analysis under the National Environmental Policy Act (NEPA). This involves examining the impacts of the proposed project alternatives on MIS habitat by discussing how direct, indirect, and cumulative effects will change the habitat in the analysis area.

These project-level impacts to habitat are then related to broader scale (bioregional) population and/or habitat trends. The appropriate approach for relating project-level impacts to broader scale trends depends on the type of monitoring identified for MIS in the LRMP as amended by the SNF MIS Amendment ROD. Hence, where the SQF LRMP as amended by the SNF MIS Amendment ROD identifies distribution population monitoring for an MIS, the project-level habitat effects analysis for that MIS is informed by available distribution population monitoring data, which are gathered at the bioregional scale. The bioregional scale monitoring identified in the SQF LRMP, as amended, for MIS analyzed for the TRRP Project is summarized in Section 3 of this report.

Adequately analyzing project effects to MIS generally involves the following steps:

- Identifying which habitat and associated MIS would be either directly or indirectly affected by the project alternatives; these MIS are potentially affected by the project.
- Summarizing the bioregional-level monitoring identified in the LRMP, as amended, for this subset of MIS.
- Analyzing project-level effects on MIS habitat for this subset of MIS.

- Discussing bioregional scale habitat and/or population trends for this subset of MIS.
- Relating project-level impacts on MIS habitat to habitat and/or population trends at the bioregional scale for this subset of MIS.

These steps are described in detail in the Pacific Southwest Region's draft document "MIS Analysis and Documentation in Project-Level NEPA, R5 Environmental Coordination" (May 25, 2006) (USDA Forest Service 2006a). This Management Indicator Species (MIS) Report documents application of the above steps to select project-level MIS and analyze project effects on MIS habitat for the TRRP Project.

1.b. Direction Regarding Monitoring of MIS Population and Habitat Trends at the Bioregional Scale.

The bioregional scale monitoring strategy for the Sequoia NF's MIS is found in the Sierra Nevada Forests Management Indicator Species Amendment (SNF MIS Amendment) Record of Decision (ROD) of 2007 (USDA Forest Service 2007a). Bioregional scale habitat monitoring is identified for all twelve of the terrestrial MIS. In addition, bioregional scale population monitoring, in the form of distribution population monitoring, is identified for all of the terrestrial MIS except for the greater sage-grouse. For aquatic macroinvertebrates, the bioregional scale monitoring identified is Index of Biological Integrity and Habitat. The current bioregional status and trend of populations and/or habitat for each of the MIS is discussed in the 2010 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2010a).

• MIS Habitat Status and Trend.

All habitat monitoring data are collected and/or compiled at the bioregional scale, consistent with the LRMP as amended by the 2007 SNF MIS Amendment ROD (USDA Forest Service 2007a).

Habitats are the vegetation types (for example, early seral coniferous forest) or ecosystem components (for example, snags in green forest) required by an MIS for breeding, cover, and/or feeding. MIS for the Sierra Nevada National Forests represent 10 major habitats and 2 ecosystem components (USDA Forest Service 2007a), as listed in Table 1. These habitats are defined using the California Wildlife Habitat Relationship (CWHR) System (CDFG 2005). The CWHR System provides the most widely used habitat relationship models for California's terrestrial vertebrate species (ibid). It is described in detail in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

Habitat status is the current amount of habitat on the Sierra Nevada Forests. Habitat trend is the direction of change in the amount or quality of habitat over time. The methodology for assessing habitat status and trend is described in detail in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

• MIS Population Status and Trend.

All population monitoring data are collected and/or compiled at the bioregional scale, consistent with the LRMP as amended by the 2007 SNF MIS Amendment ROD (USDA Forest Service 2007a). The information is presented in detail in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

Population monitoring strategies for MIS of the Sequoia NF are identified in the 2007 Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment ROD (USDA Forest Service 2007a). Population status is the current condition of the MIS related to the population monitoring data required in the 2007 SNF MIS Amendment ROD for that MIS. Population trend is the direction of change in that population measure over time.

There are a myriad of approaches for monitoring populations of MIS, from simply detecting presence to detailed tracking of population structure (USDA Forest Service 2001, Appendix E, page E-19). A distribution population monitoring approach is identified for all of the terrestrial MIS in the 2007 SNF MIS Amendment, except for the greater sage-grouse (USDA Forest Service 2007a). Distribution population monitoring consists of collecting presence data for the MIS across a number of sample locations over time. Presence data are collected using a number of direct and indirect methods, such as surveys (population surveys), bird point counts, tracking number of hunter kills, counts of species sign (such as deer pellets), and so forth. The specifics regarding how these presence data are assessed to track changes in distribution over time vary by species and the type of presence data collected, as described in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

- **Aquatic Macroinvertebrate Status and Trend.**

For aquatic macroinvertebrates, condition and trend is determined by analyzing macroinvertebrate data using the predictive, multivariate River Invertebrate Prediction And Classification System (RIVPACS) (Hawkins 2003) to determine whether the macroinvertebrate community has been impaired relative to reference condition within perennial water bodies. This monitoring consists of collecting aquatic macroinvertebrates and measuring stream habitat features according to the Stream Condition Inventory (SCI) manual (Frasier et al. 2005). Evaluation of the condition of the biological community is based upon the “observed to expected” (O/E) ratio, which is a reflection of the number of species observed at a site versus the number expected to occur there in the absence of impairment. Sites with a low O/E scores have lost many species predicted to occur there, which is an indication that the site has a lower than expected richness of sensitive species and is therefore impaired.

2. Selection of Project level MIS

Management Indicator Species (MIS) for the Sequoia NF are identified in the 2007 Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment (USDA Forest Service 2007a). The habitats and ecosystem components and associated MIS analyzed for the project were selected from this list of MIS, as indicated in Table 1. In addition to identifying the habitat or ecosystem components (1st column), the CWHR type(s) defining each habitat/ecosystem component (2nd column), and the associated MIS (3rd column), the Table discloses whether or not the habitat of the MIS is potentially affected by the TRRP Project (4th column).

Table 1. Selection of MIS for Project-Level Habitat Analysis for the TRRP Project.

Habitat or Ecosystem Component	CWHR Type(s) defining the habitat or ecosystem component¹	Sierra Nevada Forests Management Indicator Species <i>Scientific Name</i>	Category for Project Analysis²
Riverine & Lacustrine	lacustrine (LAC) and riverine (RIV)	aquatic macroinvertebrates	2
Shrubland (west-slope chaparral types)	montane chaparral (MCP), mixed chaparral (MCH), chamise-redshank chaparral (CRC)	fox sparrow <i>Passerella iliaca</i>	3
Oak-associated Hardwood & Hardwood/conifer	montane hardwood (MHW), montane hardwood-conifer (MHC)	mule deer <i>Odocoileus hemionus</i>	3
Riparian	montane riparian (MRI), valley foothill riparian (VRI)	yellow warbler <i>Dendroica petechia</i>	2
Wet Meadow	Wet meadow (WTM), freshwater emergent wetland (FEW)	Pacific chorus frog <i>Pseudacris regilla</i>	2
Early Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), Jeffrey pine (JPN), tree sizes 1, 2, and 3, all canopy closures	Mountain quail <i>Oreortyx pictus</i>	3
Mid Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), Jeffrey pine (JPN), tree size 4, all canopy closures	Mountain quail <i>Oreortyx pictus</i>	3
Late Seral Open Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), Jeffrey pine (JPN), tree size 5, canopy closures S and P	Sooty grouse <i>Dendragapus obscurus</i>	3
Late Seral Closed Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), Jeffrey pine (JPN), tree size 5 (canopy closures M and D), and tree size 6.	California spotted owl <i>Strix occidentalis occidentalis</i>	3
		American marten <i>Martes americana</i>	
		northern flying squirrel <i>Glaucomys sabrinus</i>	
Snags in Green Forest	Medium and large snags in green forest	hairy woodpecker <i>Picoides villosus</i>	3
Snags in Burned Forest	Medium and large snags in burned forest (stand-replacing fire)	black-backed woodpecker <i>Picoides arcticus</i>	1

¹ All CWHR size classes and canopy closures are included unless otherwise specified; **dbh** = diameter at breast height; **Canopy Closure classifications:** S=Sparse Cover (10-24% canopy closure); P= Open cover (25-39% canopy closure); M= Moderate cover (40-59% canopy closure); D= Dense cover (60-100% canopy closure); **Tree size classes:** 1 (Seedling)(<1" dbh); 2 (Sapling)(1"-5.9" dbh); 3 (Pole)(6"-10.9" dbh); 4 (Small tree)(11"-23.9" dbh); 5 (Medium/Large tree)(≥24" dbh); 6 (Multi-layered Tree) [In PPN and SMC] (Mayer and Laudenslayer 1988).

² **Category 1:** MIS whose habitat is not in or adjacent to the project area and would not be affected by the project.

Category 2: MIS whose habitat is in or adjacent to project area, but would not be either directly or indirectly affected by the project.

Category 3: MIS whose habitat would be either directly or indirectly affected by the project.

The following habitats occur within the analysis area (Middle Fork Tule River Watershed), but are not affected by the TRRP Project: Riverine & Lacustrine, Riparian, and Wet Meadow.

Riverine & Lacustrine: This habitat does not occur within the project area.

Riparian habitat: None occurs within the project area and this habitat would not be directly or indirectly affected by the project.

Wet Meadow: There is no wet meadow habitat within the project area and this habitat would not be directly or indirectly affected by the project.

Snags in Burned Forest: The TRRP project is not a fire salvage or fire restoration project, and there have been no recent stand-replacing fires in the project area. Therefore, black-backed woodpeckers do not have habitat in or adjacent to the project area and would not be affected by the project.

The MIS whose habitat would be either directly or indirectly affected by the TRRP Project, identified as Category 3 in Table 1, are carried forward in this analysis, which will evaluate the direct, indirect, and cumulative effects of the proposed action and alternatives on the habitat of these MIS. The MIS selected for project-level MIS analysis for the TRRP Project are: fox sparrow, mule deer, mountain quail, sooty grouse, California spotted owl, American marten, northern flying squirrel, and hairy woodpecker.

3. Bioregional Monitoring Requirements for MIS Selected for Project-Level Analysis

3.a. MIS Monitoring Requirements.

The Sierra Nevada Forests Management Indicator Species (SNF MIS) Amendment (USDA Forest Service 2007a) identifies bioregional scale habitat and/or population monitoring for the Management Indicator Species for ten National Forests, including the Sequoia NF. The habitat and/or population monitoring requirements for Sequoia NF's MIS are described in the 2010 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2010a) and are summarized below for the MIS being analyzed for the TRRP Project. The applicable habitat and/or population monitoring results are also described in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a) and are summarized in Section 5 below for the MIS being analyzed for the TRRP Project.

Habitat monitoring at the bioregional scale is identified for all the habitats and ecosystem components, including the following analyzed for the TRRP Project: shrubland, oak-associated hardwood & hardwood/conifer; early seral coniferous forest; mid seral coniferous forest; late seral open canopy coniferous forest; late seral closed canopy coniferous forest; and snags in green forest.

Population monitoring at the bioregional scale for mule deer, mountain quail, sooty grouse, California spotted owl, American marten, northern flying squirrel, and hairy woodpecker:

distribution population monitoring. Distribution population monitoring consists of collecting presence data for the MIS across a number of sample locations over time (also see USDA Forest Service 2001, Appendix E).

3.b. How MIS Monitoring Requirements are Being Met.

Habitat and/or distribution population monitoring for all MIS is conducted at the Sierra Nevada scale. Refer to the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a) for details by habitat and MIS.

4. Description of Proposed Project.

The purpose of this project is to reduce the risk of wildland fire, starting on the Sequoia National Forest or private lands, from spreading onto the Tule River Reservation. The forest lands on the north boundary of the Tule River Reservation encompasses portions of the Black Mountain Giant Sequoia Grove, planted conifer stands, mixed conifer forest, montane chaparral and private lands. These lands encompass the higher elevations of the Middle Fork Tule River watershed and the elevations in the area ranges from 4,800 to 7,000 feet. The MIS vegetation types in the TRRP Project Area and the surrounding Middle Fork Tule River watershed are described in Table 2.

Table 2. MIS Vegetation Types in the Analysis Area and TRRP Project Area.

MIS Vegetation Types	Middle Fork Tule River Watershed (approximate acres)*	TRPP Project Area (approximate acres)
Riverine & Lacustrine	4	0
Shrubland (west-slope chaparral types)	9,004	12
Oak-associated Hardwoods & Hardwood/conifers	18,777	479
Riparian	314	0
Wet Meadow	394	0
Early Seral Coniferous	2,050	283
Mid Seral Coniferous	20,585	689
Late Seral Open Canopy Coniferous	193*	65*
Late Seral Closed Canopy Coniferous	11,289*	1,278*

*Does not include 30 acres of late seral coniferous forest with unknown canopy cover

The Forest Service developed three alternatives, including the No Action and Proposed Action alternatives, in response to issues raised by the public. The alternatives are described in detail in the Tule River Reservation Protection Project Draft Environmental Impact Statement (USDA Forest Service 2013) and are summarized below.

Alternative 1

Under Alternative 1 (No Action), current management plans would continue to guide management of the project area. No reduction in the risk of wildland fire starting on the Sequoia

National Forest or private lands, and spreading onto the Tule River Indian Reservation (Reservation) would be implemented to accomplish the purpose and need at this time.

Alternative 2

The proposed action is to reduce surface and ladder fuels on approximately 1,400 acres using a combination of treatments. These treatments include constructing shaded fuel breaks along ridgelines, private land boundaries and road edges; reducing fuels in planted areas; and prescribed burning in a portion of these and additional areas using jackpot burning, pile burning, and understory burning techniques. The diameter limit for all the fuels reduction activities in the project area would be 12 inches dbh.

There are three treatment areas proposed in Alternative 2, and each has a specific set of prescriptions as described in further detail in the following paragraphs:

- Planted Stands
- Shaded Fuel Breaks
- Understory Burning

A portion of the trees may be removed as fuelwood under the terms and conditions of firewood/fuelwood permits. The project area is within the old forest emphasis land allocation of Giant Sequoia National Monument. Snags are an important component of old forest habitat in this land allocation. Therefore, where trees over 15 inches dbh are available, a minimum of four snags per acre would be retained averaged across 10 acres.

Planted stands

The TRRP project area contains approximately 400 acres of planted stands. Alternative 2 proposes to reduce fuels while creating more heterogeneity and resiliency by using hand treatments to vary spacing both in the direction of travel (i.e., upslope/downslope) and wherever possible, in alternate directions (i.e., side slope). Specific treatments include:

- Vary spacing to favor the retention of the largest trees, according to the species priority described below (in descending order of importance):
 - 1) Retain all trees greater than 12 inches diameter breast height (dbh);
 - 2) Giant sequoia;
 - 3) Black oak;
 - 4) Pine; and
 - 5) An average of five hardwoods per acre.
- Cut trees up to 12 inches dbh following the priority list.
- Where the largest trees are less than eight inches diameter at breast height (dbh), thin trees to 100 trees per acre (i.e. average tree spacing of 20 feet apart).
- Where the largest trees are eight inches and larger, thin trees to 70 trees per acre (i.e. average tree spacing of 25 feet apart).
- Remove sufficient surface fuels to produce an average flame length of four feet or less by piling existing dead and down material between one and eight inches dbh.
- Leave trees may be limbed to reduce fire risk if deemed necessary.
- After treatments above, use jackpot burning and pile burning to reduce fuel loading.

- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

Shaded fuel breaks:

Alternative 2 would establish several fuelbreaks using hand treatments across approximately 730 acres. Based on terrain and vegetation features these fuelbreaks would vary in width from 150 to 400 feet wide:

- 1) Construct a 150 foot wide shaded fuel break along the northern boundary of the Reservation on and to the east of Black Mountain.
- 2) Construct a 200 foot wide shaded fuel break (100 feet on both sides of the road) along Forest Roads (FR) 21S94, 21S12 (from 21S94 to 21S25), 21S12b, 21S25, 21S25a, 21S25b, 21S25c, 21S25d, and 21S58.
- 3) Construct a 200 foot wide shaded fuel break on National Forest land adjacent to private property.
- 4) Construct a 300 foot wide shaded fuel break along the eastern boundary of the project area.
- 5) Construct a 400 foot wide shaded fuel break along the western boundary of the project area.

Construction of the shaded fuel breaks would include one or more of the following treatments:

- Target shade-tolerant tree species (incense cedar, white fir and red fir) for cutting and retain giant sequoia, oak, and pine trees.
- Remove sufficient surface fuels to produce an average flame length of four feet or less after project implementation, by piling existing dead and down material between one and eight inches dbh.
- Remove sufficient ladder fuels, to meet an average canopy base height of 20 feet, by:
 - a. Cutting and piling brush,
 - b. Cutting and piling trees up to 12 inches dbh to an average of no more than 70 trees per acre (i.e. average tree spacing of 25 feet apart).
- Where shaded fuel break and spotted owl protected activity centers overlap (approximately 130 acres), cut and pile brush and trees (less than six inches dbh).
- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.
- After treatments above, use jackpot burning and pile burning to reduce fuel loading.

Understory Burn:

Understory burning is proposed on approximately 280 acres between the thinned planted areas and some of the shaded fuel breaks. This prescribed burning would reduce surface fuels to retain an average of 15 tons per acre. The burn area would have hand lines constructed and incidental small trees, generally less than six inches dbh, would be pruned or cut to prepare for burning. Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

Alternative 3

Alternative 3 was developed to address the issues of high snag density; high concentrations of fuel below Forest Service Roads 21S94 and 21S12; and the risk of fire spreading from Camp Nelson, Rogers Camp, Simmons Post Camp, Mountain Aire, and Bateman Ridge private lands,

especially in the upper end of Wilson Creek. This alternative proposes to reduce surface and ladder fuels on approximately 2,830 acres within the project area. Alternative 3 would treat the same areas as Alternative 2, and add a fourth treatment area to further reduce fuels:

- Planted Stands
- Shaded Fuel Breaks
- Understory Burning
- Other Fuel Treatments

Below is a complete description of the treatment areas and the management activities that are being proposed for each one.

Planted stands

The TRRP project area contains approximately 400 acres of planted areas. Alternative 3 proposes to reduce fuels while creating more heterogeneity and resiliency by using hand treatments to vary spacing both in the direction of travel (i.e., upslope/downslope) and wherever possible, in alternate directions (i.e., side slope). Specific treatments include:

- Vary spacing to favor the retention of the largest trees, according to the species priority described below (in descending order of importance):
 - 6) Retain all trees greater than 12 inches diameter breast height (dbh);
 - 7) Giant sequoia;
 - 8) Black oak;
 - 9) Pine; and
 - 10) An average of five hardwoods per acre.
- Cut trees less than 12 inches dbh following the priority list.
- Where the largest trees are less than eight inches diameter at breast height (dbh), thin trees to 100 trees per acre (i.e. average tree spacing of 20 feet apart).
- Where the largest trees are eight inches and larger, thin trees to 70 trees per acre (i.e. average tree spacing of 25 feet apart).
- Remove sufficient surface fuels to produce an average flame length of four feet or less by piling existing dead and down material between one and eight inches dbh.
- Leave trees may be limbed to reduce fire risk if deemed necessary.
- After treatments above, use jackpot burning and pile burning to reduce fuel loading.
- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

Shaded fuel breaks:

Alternative 3 would establish several fuelbreaks using hand treatments to meet Shaded Fuelbreak Guidelines, across approximately 690 acres. Some of the fuelbreaks would be narrower than those proposed in Alternative 2, because of the added fuel treatment areas proposed in Alternative 3. Based on terrain and vegetation features these fuelbreaks would vary in width from 150 to 300 feet wide:

- 1) Construct a 150 foot wide shaded fuel break along the northern boundary of the Reservation on and to the east of Black Mountain.

- 2) Construct a 200 foot wide shaded fuel break (100 feet on both sides of the road) along FRs 21S94, 21S12 (from 21S94 to 21S25), 21S12b, 21S25, 21S25a, 21S25b, 21S25c, 21S25d, and 21S58.
- 3) Construct a 200 foot wide shaded fuel break on National Forest land adjacent to private property.
- 4) Construct a 300 foot wide shaded fuel break along the eastern and northwestern boundaries of the project area.

Construction of the shaded fuel breaks would include one or more of the following treatments:

- Target shade-tolerant tree species (incense cedar, white fir and red fir) for cutting and retain giant sequoia, oak, and pine trees.
- Remove sufficient surface fuels to produce an average flame length of four feet or less after project implementation, by piling existing dead and down material between one and eight inches dbh.
- Remove sufficient ladder fuels, to meet an average canopy base height of 20 feet, by:
 - a. Cutting and piling brush,
 - b. Cutting and piling trees up to 12 inches dbh to an average of no more than 70 trees per acre (i.e. average tree spacing of 25 feet apart).
- Where shaded fuel break and spotted owl protected activity centers overlap (approximately 130 acres), cut and pile brush and trees (less than six inches dbh).
- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.
- After treatments above, use jackpot burning and pile burning to reduce fuel loading.

Understory Burn:

Understory burning is proposed on approximately 240 acres between the thinned planted areas and some of the shaded fuel breaks. This prescribed burning would reduce surface fuels to retain an average of 15 tons per acre. The burn area would have hand lines constructed and incidental small trees, generally less than six inches dbh, would be pruned or cut to prepare for burning. Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

Other Fuels Treatments:

Alternative 3 proposes approximately 1,500 more acres of fuels reduction treatments within the project area than under Alternative 2. These treatments would focus on reducing surface and ladder fuels in the area between the planted areas and the fuelbreaks using the following criteria:

- Remove sufficient surface fuels to produce an average flame length of less than six feet after project implementation, by piling existing dead and down material up to 8 inches dbh.
- Remove sufficient ladder fuels, to meet an average canopy base height of 20 feet, by:
 - 1) Cutting and piling brush
 - 2) Cutting and piling trees up to 12 inches dbh to an average of no more than 70 trees per acre.
- Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

- Where these fuel treatments and spotted owl protected activity centers overlap (305 acres), cut and pile brush and trees (less than inches dbh).
- After the cutting and piling, use jackpot burning and pile burning to reduce fuel loading. Where these fuel treatments and fisher den buffer overlap, (approximately 45 acres), only pile and burn methods would be used.

5. Effects of Proposed Project on the Habitat for the Selected Project-Level MIS.

The following section documents the analysis for the following ‘Category 3’ species: fox sparrow, mule deer, mountain quail, sooty grouse, California spotted owl, American marten, northern flying squirrel, and hairy woodpecker. The analysis of the effects of the TRRP Project on the MIS habitat for the selected project-level MIS is conducted at the project scale. Detailed information on the MIS is documented in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

The cumulative effects analysis area is the Middle Fork Tule River watershed, which covers 70,321 acres. The temporal scale for the analysis is 2004 to 2018. Past actions prior to 2004 are incorporated in the current GIS vegetation layer. Five years from the present is the period of time the direct effects of the project should occur and for which there is information on reasonably foreseeable future actions in the analysis area. For assessment of future projects, the Forest completes a quarterly “Schedule of Proposed Actions (SOPA)” which tracks proposals that are ongoing or have sufficient detail to insure they are reasonably foreseeable. The SOPA published on 4/1/2013 had no projects planned in the Middle Fork Tule River Watershed. Projects considered in the cumulative effects analysis are summarized in Table 3. Acres used in this analysis are rounded to the nearest whole number.

Climate changes will likely cause changes in the distribution of MIS in the project area. Modeling efforts have projected that forest types and other vegetation dominated by woody plants in California would migrate to higher elevations as warmer temperatures make those areas suitable for colonization and survival. For example, with higher temperatures and a longer growing season, the area occupied by subalpine and alpine vegetation was predicted to decrease as evergreen conifer forests and shrublands migrate to higher altitudes. The precise effects of climate change on individual MIS are difficult to predict and will not be addressed in the effects analysis.

Cumulative effects at the bioregional scale are tracked via the SNF MIS Bioregional monitoring, and detailed in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

Table 3. Past, Present and Potential Future Projects Impacting MIS Habitat in the TRRP Analysis Area

Project type	Projects	Acres of MIS Habitats Impacted	
Fuels Reduction	Camp Nelson, Ponderosa	Shrubland	102 acres
		Oak-associated Hardwood & Hardwood/conifer	624 acres
		Early and Mid Seral Coniferous Forest	379 acres
		Late Seral Closed Canopy Coniferous Forest	88 acres
Past Wildfires	Deep, Wishon, River, Maggie, Stairs, Moses	Shrubland	1,754 acres
		Oak-associated Hardwood & Hardwood/conifer	922 acres
		Early and Mid Seral Coniferous Forest	154 acres
		Late Seral Closed Canopy Coniferous Forest	27 acres
Potential Future Vegetation Mgt. Projects	None listed on the current SOPA		0 acres

Shrubland (West-Slope Chaparral) Habitat (Fox Sparrow)

Habitat/Species Relationship.

The fox sparrow was selected as the MIS for shrubland (chaparral) habitat on the west-slope of the Sierra Nevada, comprised of montane chaparral (MCP), mixed chaparral (MCH), and chamise-redshank chaparral (CRC) as defined by the California Wildlife Habitat Relationships System (CWHR) (CDFG 2005). Recent empirical data from the Sierra Nevada indicate that, in the Sierra Nevada, the fox sparrow is dependent on open shrub-dominated habitats for breeding (Burnett and Humple 2003, Burnett et al. 2005, Sierra Nevada Research Center 2007).

Project-level Effects Analysis - Shrubland (West-Slope Chaparral) Habitat

Habitat Factor(s) for the Analysis: (1) Acres of shrubland (chaparral) habitat [CWHR montane chaparral (MCP), mixed chaparral (MCH), and chamise-redshank chaparral (CRC)]. (2) Acres with changes in shrub ground cover class (Sparse=10-24%; Open=25-

39%; Moderate=40-59%; Dense=60-100%). (3) Acres with changes in CWHR shrub size class (Seedling shrub (seedlings or sprouts <3years); Young shrub (no crown decadence); Mature Shrub (crown decadence 1-25%); Decadent shrub (>25%).

Current Condition of the Habitat Factor(s) in the Project Area: Within the 2,838 acre project area, there are approximately 12 acres of shrubland habitat. About 9 of the acres are montane chaparral and 3 of the acres are mixed chaparral.

Alternative 2

The Proposed Action

Direct and Indirect Effects to Habitat. Only six acres of shrubland habitat are within treatment areas in this alternative. Shrubs may be cut or burned in these areas to reduce ladder fuels. The short term effects of the project will include a loss of shrub ground cover following the thinning/burning of shrubs. The size class of shrubs will change from decadent to seedling and young shrub as new sprouting occurs. Implementation of this alternative will result in (1) no change in acres of shrubland habitat, (2) a reduction in shrub ground cover classes on a maximum of six acres of shrubland habitat, and (3) a reduction in CWHR size classes on a maximum of six acres.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions potentially affecting shrubland habitat in the analysis area are described in Table 4.

Past and current fuels reduction projects reduced shrub ground cover and size class on approximately 102 acres. Recent wildfires have affected a maximum of 1,754 acres of shrubland. There are no planned future projects in the analysis area with the potential to affect shrubland habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of Alternative 2 of the TRRP Project will result in: (1) no change in acres of shrubland habitat, (2) a reduction in shrub ground cover classes on a maximum of 1,862 acres of shrubland habitat, and (3) a reduction in CWHR size classes of shrubs on a maximum of 1,862 acres. This represents 21% of the shrubland in the Middle Fork Tule River watershed analysis area.

Alternative 3

Direct and Indirect Effects to Habitat. Shrubs may be cut or burned on a total of 12 acres to reduce ladder fuels. The short term effects of the project will include a loss of shrub ground cover following the thinning/burning of shrubs. The size class of shrubs will change from decadent to seedling and young shrub as new sprouting occurs. Implementation of this alternative will result in (1) no change in acres of shrubland habitat, (2) a reduction in shrub ground cover classes on a maximum of 12 acres of shrubland habitat, and (3) a reduction in CWHR size classes on a maximum of 12 acres.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions potentially affecting shrubland habitat in the analysis area are described in Table 4.

Past and current fuels reduction projects reduced shrub ground cover and size class on approximately 102 acres. Recent wildfires have affected a maximum of 1,754 acres of shrubland. There are no planned future projects in the analysis area with the potential to affect shrubland habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of Alternative 3 of the TRRP Project will result in: (1) no change in acres of shrubland habitat, (2) a reduction in shrub ground cover classes on a maximum of 1,868 acres of shrubland habitat, and (3) a reduction in CWHR size classes of shrubs on a maximum of 1,868 acres. This represents 21% of the shrubland in the Middle Fork Tule River watershed analysis area.

Summary of Fox Sparrow Status and Trend at the Bioregional Scale

The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the fox sparrow; hence, the shrubland effects analysis for the TRRP Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the fox sparrow. This information is drawn from the detailed information on habitat and population trends in the 2010 Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 1,009,681 acres of west-slope chaparral shrubland habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is slightly increasing (changing from 8% to 9% of the acres on National Forest System lands).

Population Status and Trend. Monitoring of fox sparrows across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes mountain quails, hairy woodpeckers, and yellow warblers (USDA Forest Service 2010a, <http://data.prbo.org/partners/usfs/snmis/>). Fox sparrows were detected on 36.9% of 1659 point counts in 2009 and 44.3% of 2266 point counts in 2010, with detections on all 10 national forests in both years. The average abundance (number of individuals recorded on passive point count surveys) was 0.563 in 2009 and 0.701 in 2010. These data indicate that fox sparrows continue to be distributed across the 10 Sierra Nevada National Forests. In addition, the fox sparrows continue to be monitored and surveyed in the Sierra Nevada at various sample locations by avian point count, spot mapping, mist-net, and breeding bird survey protocols. These are summarized in the 2008 Bioregional Monitoring Report (USDA Forest Service 2008). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although there may be localized declines in the population trend, the distribution of fox sparrow populations in the Sierra Nevada is stable.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Fox Sparrow Trend.

Since the alternatives in the TRRP Project will result in a reduction in shrub ground cover and size class on less than 1% of existing shrubland habitat, this project will not alter the existing trend in the habitat, nor will it lead to a change in the distribution of fox sparrows across the Sierra Nevada bioregion.

Oak-Associated Hardwoods and Hardwood/Conifer Habitat (Mule deer)**Habitat/Species Relationship.**

The mule deer was selected as the MIS for oak-associated hardwood and hardwood/conifer in the Sierra Nevada, comprised of montane hardwood (MHW) and montane hardwood-conifer (MHC) as defined by the California Wildlife Habitat Relationships System (CWHR) (CDFG 2005). Mule deer range and habitat includes coniferous forest, foothill woodland, shrubland, grassland, agricultural fields, and suburban environments (CDFG 2005). Many mule deer migrate seasonally between higher elevation summer range and low elevation winter range (Ibid). On the west slope of the Sierra Nevada, oak-associated hardwood and hardwood/conifer areas are an important winter habitat (CDFG 1998).

Project-level Effects Analysis - Oak-Associated Hardwoods and Hardwood/Conifer Habitat

Habitat Factor(s) for the Analysis: (1) Acres of oak-associated hardwood and hardwood/conifer habitat [CWHR montane hardwood (MHW), montane hardwood-conifer (MHC)]. (2) Acres with changes in hardwood canopy cover (Sparse=10-24%; Open=25-39%; Moderate=40-59%; Dense=60-100%). (3) Acres with changes in CWHR size class of hardwoods [1/2 (Seedling/Sapling) (<6" dbh); 3 (Pole) (6"-10.9" dbh); 4 (Small tree) (11"-23.9" dbh); 5 (Medium/Large tree) (≥24" dbh)]

Current Condition of the Habitat Factor(s) in the Project Area: Within the 2,838 acre project area, there are approximately 479 acres of oak-associated hardwood and hardwood/conifer habitat. Approximately 243 of the acres are montane hardwood-conifer and 236 acres are montane hardwood.

Alternative 1**No Action**

Under the No Action alternative there would be no changes in oak-associated hardwoods and hardwood/conifer habitat.

Alternative 2

The Proposed Action

Direct and Indirect Effects to Habitat. For this alternative, treatments within oak-associated hardwoods and hardwood/conifer habitat include thinning and ladder fuel reduction on approximately 159 acres. The thinning would focus on cedar and firs, with oaks retained. Although the silviculture prescription favors the retention of oaks, some trees may be cut if they are under 12" dbh. Implementation of this alternative will result in (1) no change in acres of oak-associated hardwood and hardwood/conifer habitats, (2) a possible reduction of hardwood canopy cover following thinning, and (3) no change in CWHR size classes of hardwoods on any acres.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions potentially affecting oak-associated hardwood and hardwood/conifer habitats in the analysis area are described in Table 4.

Past and current fuels reduction projects included hazard tree removal in oak-associated hardwood and hardwood/conifer habitats. Recent wildfires have affected a maximum of 922 acres of oak-associated hardwood and hardwood/conifer habitats. There are no planned future projects in the analysis area with the potential to affect oak-associated hardwood and hardwood/conifer habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of the TRPP Project Alternative 2 will result in: (1) no change in acres of oak-associated hardwood and hardwood/conifer habitats, (2) a possible reduction in hardwood canopy cover classes on a maximum of 1,081 acres due to mortality during fires and thinning (this represents 6% of the oak-associated hardwood and hardwood/conifer habitat in the Middle Fork Tule River watershed), and (3) no change in CWHR size classes of hardwoods on any acres.

Alternative 3

Direct and Indirect Effects to Habitat. For this alternative, treatments within oak-associated hardwoods and hardwood/conifer habitat include thinning and ladder fuel reduction on approximately 476 acres. Although the silviculture prescription favors the retention of oaks, some trees may be cut if they are under 12" dbh. Prescribed underburning between planted areas would occur on an additional two acres of oak-associated hardwoods and hardwood/conifer habitat.

Implementation of this alternative will result in (1) no change in acres of oak-associated hardwood and hardwood/conifer habitats, (2) a possible reduction of hardwood canopy cover following thinning, and (3) no change in CWHR size classes of hardwoods on any acres.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions potentially affecting oak-associated hardwood and hardwood/conifer habitats in the analysis area are described in Table 4.

Past and current fuels reduction projects included hazard tree removal in oak-associated hardwood and hardwood/conifer habitats. Recent wildfires have affected a maximum of 922 acres of oak-associated hardwood and hardwood/conifer habitats. There are no planned future projects in the analysis area with the potential to affect oak-associated hardwood and hardwood/conifer habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of the TRPP Project Alternative 3 will result in: (1) no change in acres of oak-associated hardwood and hardwood/conifer habitats, (2) a possible reduction in hardwood canopy cover classes on a maximum of 1,400 acres due to mortality during fires and thinning (this represents 7% of the oak-associated hardwood and hardwood/conifer habitat in the Middle Fork Tule River watershed), and (3) no change in CWHR size classes of hardwoods on any acres.

Summary of Mule Deer Status and Trend at the Bioregional Scale

The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the mule deer; hence, the oak-associated hardwood and hardwood/conifer effects analysis for the TRRP Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the mule deer. This information is drawn from the detailed information on habitat and population trends in the 2010 Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 808,006 acres of oak-associated hardwood and hardwood/mixed conifer habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is slightly increasing (changing from 5% to 7% of the acres on National Forest System lands).

Population Status and Trend. The mule deer has been monitored in the Sierra Nevada at various sample locations by herd monitoring (spring and fall) and hunter survey and associated modeling (CDFG 2007, 2010). California Department of Fish and Game (CDFG) conducts surveys of deer herds in early spring to determine the proportion of fawns that have survived the winter, and conducts fall counts to determine herd composition (CDFG 2007). This information, along with prior year harvest information, is used to estimate overall herd size, sex and age ratios, three-year average populations, and the predicted number of bucks available to hunt (CDFG 2007, 2010). These data indicate that mule deer continue to be present across the Sierra Nevada, and current data at the range wide, California, and Sierra Nevada scales indicate that, although there may be localized declines in some herds or Deer Assessment Units, the distribution of mule deer populations in the Sierra Nevada is stable.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Mule Deer Trend.

Since the alternatives in the TRRP Project will result in no change in acres or CWHR size classes of oak-associated hardwood and hardwood/conifer habitat, and a possible reduction of canopy cover on less than 1% of the available habitat, this project will not alter the existing trend in the habitat, nor will it lead to a change in the distribution of mule deer across the Sierra Nevada bioregion.

Early and Mid Seral Coniferous Forest Habitat (Mountain quail)**Habitat/Species Relationship.**

The mountain quail was selected as the MIS for early and mid seral coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat in the Sierra Nevada. Early seral coniferous forest habitat is comprised primarily of seedlings (<1" dbh), saplings (1"-5.9" dbh), and pole-sized trees (6"-10.9" dbh). Mid seral coniferous forest habitat is comprised primarily of small-sized trees (11"-23.9" dbh). The mountain quail is found particularly on steep slopes, in open, brushy stands of conifer and deciduous forest and woodland, and chaparral; it may gather at water sources in the summer, and broods are seldom found more than 0.8 km (0.5 mi) from water (CDFG 2005).

Project-level Effects Analysis – Early and Mid Seral Coniferous Forest Habitat

Habitat Factor(s) for the Analysis: (1) Acres of early (CWHR tree sizes 1, 2, and 3) and mid seral (CWHR tree size 4) coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), Jeffrey pine (JPN), tree sizes 1, 2, 3, and 4, all canopy closures]. (2) Acres with changes in CWHR tree size class. (3) Acres with changes in tree canopy closure. (4) Acres with changes in understory shrub canopy closure.

Current Condition of the Habitat Factor(s) in the Project Area: In the project area, there are 283 acres of early seral coniferous forest (SMC) and 689 acres of mid seral coniferous forest (SMC).

Alternative 1**No Action**

Under the No Action alternative there would be no changes in early and mid seral coniferous forest habitat.

Alternative 2

The Proposed Action

Direct and Indirect Effects to Habitat. For this alternative, treatment within early seral and mid seral coniferous forest habitat includes thinning and ladder fuel reduction on approximately 565 acres. Prescribed underburning would occur on an additional 75 acres of early seral and mid seral coniferous forest habitat.

Implementation of Alternative 2 will result in: (1) no change in acres of early and mid seral coniferous forest habitat, (2) no change in CWHR tree size class on any acres, (3) a reduction in tree canopy closure on a maximum of 640 acres, and (4) a decrease in understory shrub canopy cover on a maximum of 640 acres.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions potentially affecting early and mid seral coniferous forest habitat in the analysis area are described in Table 4.

Past and current fuels reduction projects reduced tree canopy closure and understory shrub cover on approximately 379 acres. Recent wildfires have affected a maximum of 154 acres of early and mid seral coniferous forest. There are no planned future projects in the analysis area with the potential to affect early and mid seral coniferous forest habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of the TRRP Project Alternative 2 will result in: (1) no change in acres of early and mid seral coniferous forest habitat, (2) no change in CWHR tree size class on any acres, (3) a reduction in tree canopy closure on 1,173 acres of early and mid seral coniferous habitat, and (4) a decrease in understory shrub canopy cover on a maximum of 1,173 acres. This represents about 5% of the early and mid seral coniferous habitat in the Middle Fork Tule River watershed.

Alternative 3

Direct and Indirect Effects to Habitat. In Alternative 3, treatment within early seral and mid seral coniferous forest habitat includes thinning and ladder fuel reduction on approximately 906 acres. Prescribed underburning only between planted areas would occur on an additional 62 acres of early seral and mid seral coniferous forest habitat.

Implementation of Alternative 3 will result in: (1) no change in acres of early and mid seral coniferous forest habitat, (2) no change in CWHR tree size class on any acres, (3) a reduction in tree canopy closure on a maximum of 968 acres, and (4) a decrease in understory shrub canopy cover on a maximum of 968 acres.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions potentially affecting early and mid seral coniferous forest habitat in the analysis area are described in Table 4.

Past and current fuels reduction projects reduced tree canopy closure and understory shrub cover on approximately 379 acres. Recent wildfires have affected a maximum of 154 acres of early and mid seral coniferous forest. There are no planned future projects in the analysis area with the potential to affect early and mid seral coniferous forest habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of the TRRP Project Alternative 3 will result in: (1) no change in acres of early and mid seral coniferous forest habitat, (2) no change in CWHR tree size class on any acres, (3) a reduction in tree canopy closure on a maximum of 1,501 acres of early and mid seral coniferous habitat, and (4) a decrease in understory shrub canopy cover on a maximum of 1,501 acres. This represents less than 7% of the early and mid seral coniferous habitat in the Middle Fork Tule River watershed.

Summary of Mountain Quail Status and Trend at the Bioregional Scale

The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the mountain quail; hence, the early and mid seral coniferous forest effects analysis for the TRRP Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the mountain quail. This information is drawn from the detailed information on habitat and population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 530,851 acres of early seral and 2,776,022 acres of mid seral coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend for early seral is decreasing (changing from 9% to 5% of the acres on National Forest System lands) and the trend for mid seral is increasing (changing from 21% to 25% of the acres on National Forest System lands).

Population Status and Trend. Monitoring of mountain quail across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes fox sparrows, hairy woodpeckers, and yellow warblers (USDA Forest Service 2010a, <http://data.prbo.org/partners/usfs/snmis/>). Mountain quail were detected on 40.3 percent of 1659 point counts (and 48.6% of 424 playback points) in 2009 and 47.4% of 2266 point counts (and 55.3% of 492 playback points) in 2010, with detections on all 10 national forests in both years. The average abundance (number of individuals recorded on passive point count surveys) was 0.103 in 2009 and 0.081 in 2010. These data indicate that mountain quail continue to be distributed across the 10 Sierra Nevada National Forests. In addition, mountain quail continue to be monitored and surveyed in the Sierra Nevada at various sample locations by hunter survey, modeling, and breeding bird survey protocols. These are summarized in the 2008 Bioregional Monitoring Report (USDA Forest Service 2008). Current data at the rangewide, California, and Sierra

Nevada scales indicate that the distribution of mountain quail populations in the Sierra Nevada is stable.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Mountain Quail Trend.

Since the direct, indirect, and cumulative effects of the alternatives in the TRRP Project will result in no change in early and mid seral coniferous forest habitat acres and size classes and moderate change in canopy closure and shrub understory on less than 1% of the available habitat, this project will not alter the existing trend in the habitat, nor will it lead to a change in the distribution of mountain quail across the Sierra Nevada bioregion.

Late Seral Open Canopy Coniferous Forest Habitat [Sooty (blue) grouse]**Habitat/Species Relationship.**

The sooty grouse was selected as the MIS for late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures less than 40%. Sooty grouse occurs in open, medium to mature-aged stands of fir, Douglas-fir, and other conifer habitats, interspersed with medium to large openings, and available water, and occupies a mixture of mature habitat types, shrubs, forbs, grasses, and conifer stands (CDFG 2005). Empirical data from the Sierra Nevada indicate that Sooty Grouse hooting sites are located in open, mature, fir-dominated forest, where particularly large trees are present (Bland 2006).

Project-level Effects Analysis - Late Seral Open Canopy Coniferous Forest Habitat

Habitat Factor(s) for the Analysis: (1) Acres of late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P]. (2) Acres with changes in tree canopy closure class. (3) Acres with changes in understory shrub canopy closure class.

Current Condition of the Habitat Factor(s) in the Project Area: There are 65 acres of late seral open canopy coniferous forest in the TRRP project area. This is composed entirely of Sierran mixed conifer 5P. Canopy cover is unknown for 30 acres of late seral forest in the project area and these acres are excluded from the analysis.

Alternative 1**No Action**

Under the No Action alternative there would be no changes in late seral open canopy coniferous forest habitat.

Alternative 2

The Proposed Action

Direct and Indirect Effects to Habitat. For this alternative, treatment within late seral open canopy coniferous forest habitat includes thinning and ladder fuel reduction on approximately 37 acres. Implementation of Alternative 2 will result in: (1) no change in acres of late seral open canopy coniferous forest habitat, (2) a slight reduction in tree canopy closure on a maximum of 37 acres, and (3) a reduction in understory shrub canopy closure on a maximum of 37 acres.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions in the analysis area are described in Table 4. None of these actions will affect late seral open canopy coniferous forest habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of the TRRP Project Alternative 2 will result in: (1) no change in acres of late seral open canopy coniferous forest habitat, (2) a slight reduction in tree canopy closure on a maximum of 37 acres, and (3) a reduction in understory shrub canopy closure on a maximum of 37 acres. This represents about 19% of the late seral open canopy coniferous habitat in the Middle Fork Tule River watershed.

Alternative 3

Direct and Indirect Effects to Habitat. In Alternative 3, treatment within late seral open canopy coniferous forest habitat includes thinning and ladder fuel reduction on approximately 65 acres. Implementation of Alternative 3 will result in: (1) no change in acres of late seral open canopy coniferous forest habitat, (2) a slight reduction in tree canopy closure on a maximum of 65 acres, and (3) a reduction in understory shrub canopy closure on a maximum of 65 acres.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions in the analysis area are described in Table 4. None of these actions will affect late seral open canopy coniferous forest habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of the TRRP Project Alternative 3 will result in: (1) no change in acres of late seral open canopy coniferous forest habitat, (2) a slight reduction in tree canopy closure on a maximum of 65 acres, and (3) a reduction in understory shrub canopy closure on a maximum of 65 acres. This represents about 34% of the late seral open canopy coniferous habitat in the Middle Fork Tule River watershed.

Summary of Sooty Grouse Status and Trend at the Bioregional Scale

The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the sooty grouse; hence, the late seral open canopy coniferous forest effects analysis for the TRRP Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the sooty grouse. This information is drawn from the detailed information on habitat and population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 63,795 acres of late seral open canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, red fir, and eastside pine) habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is decreasing (changing from 3% to 1% of the acres on National Forest System lands).

Population Status and Trend. The sooty grouse has been monitored in the Sierra Nevada at various sample locations by hunter survey, modeling, point counts, and breeding bird survey protocols, including California Department of Fish and Game Blue (Sooty) Grouse Surveys (Bland 1993, 1997, 2002, 2006); California Department of Fish and Game hunter survey, modeling, and hunting regulations assessment (CDFG 2004a, CDFG 2004b); Multi-species inventory and monitoring on the Lake Tahoe Basin Management Unit (LTBMU 2007); and 1968 to present – BBS routes throughout the Sierra Nevada (Sauer et al. 2007). These data indicate that sooty grouse continue to be present across the Sierra Nevada, except in the area south of the Kern Gap, and current data at the range wide, California, and Sierra Nevada scales indicate that the distribution of sooty grouse populations in the Sierra Nevada north of the Kern Gap is stable.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Sooty Grouse Trend.

Since the direct, indirect, and cumulative effects of the alternatives in the TRRP Project will result in no change in acres of late seral open canopy coniferous forest habitat and changes in tree canopy closure and understory shrub canopy closure on less than 1% of the available habitat, this project will not alter the existing trend in the habitat, nor will it lead to a change in the distribution of sooty grouse across the Sierra Nevada bioregion.

Late Seral Closed Canopy Coniferous Forest Habitat (California spotted owl, American marten, and northern flying squirrel)

Habitat/Species Relationship.

California spotted owl. The California spotted owl was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40% within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. The California spotted owl is strongly associated with forests that have a complex multi-layered structure, large-diameter trees, and high canopy closure (CDFG 2005, USFWS 2006). It uses dense, multi-layered canopy cover for roost

seclusion; roost selection appears to be related closely to thermoregulatory needs, and the species appears to be intolerant of high temperatures (CDFG 2005). Mature, multi-layered forest stands are required for breeding (Ibid). The mixed-conifer forest type is the predominant type used by spotted owls in the Sierra Nevada: about 80 percent of known sites are found in mixed-conifer forest, with 10 percent in red fir forest (USDA Forest Service 2001).

American Marten. The American marten was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40% within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. Martens prefer coniferous forest habitat with large diameter trees and snags, large down logs, moderate-to-high canopy closure, and an interspersed of riparian areas and meadows. Important habitat attributes are: vegetative diversity, with predominately mature forest; snags; dispersal cover; and large woody debris (Allen 1982). Key components for westside and eastside marten habitat can be found in the Sierra Nevada Forest Plan Amendment FEIS (USDA Forest Service 2001), Volume 3, Chapter 3, part 4.4, pages 20-21.

Northern flying squirrel. The northern flying squirrel was selected as an MIS for late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat in the Sierra Nevada. This habitat is comprised primarily of medium/large trees (equal to or greater than 24 inches dbh) with canopy closures above 40% within ponderosa pine, Sierran mixed conifer, white fir, and red fir coniferous forests, and multi-layered trees within ponderosa pine and Sierran mixed conifer forests. The northern flying squirrel occurs primarily in mature, dense conifer habitats intermixed with various riparian habitats, using cavities in mature trees, snags, or logs for cover (CDFG 2005).

Project-level Effects Analysis – Late Seral Closed Canopy Coniferous Forest Habitat.

Habitat Factor(s) for the Analysis: (1) Acres of late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat [CWHR ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), tree size 5 (canopy closures M and D), and tree size 6]. (2) Acres with changes in canopy closure (D to M). (3) Acres with changes in large snags (>15" dbh) per acre.

Current Condition of the Habitat Factor(s) in the Project Area: In the project area, there are approximately 1,278 acres of late seral closed canopy coniferous forest habitat (272 acres of SMC 5M, 250 acres of SMC 5D and 756 acres of SMC 6). Canopy cover is unknown for 30 acres of late seral forest in the project area and these acres are excluded from the analysis.

Alternative 1

No Action

Under the No Action alternative there would be no changes in late seral closed canopy coniferous forest habitat.

Alternative 2

The Proposed Action

Direct and Indirect Effects to Habitat. For this alternative, treatment within late seral closed canopy coniferous forest habitat includes thinning and ladder fuel reduction on approximately 334 acres. Prescribed underburning only would occur on an additional 202 acres of late seral closed canopy coniferous forest habitat.

Implementation of Alternative 2 will result in: (1) no change in acres of late seral closed canopy coniferous forest habitat, (2) a slight reduction in canopy closure on a maximum of 536 acres, (3) a possible reduction in the number of large snags (>15" dbh) per acre if snags that pose an imminent safety hazard to the road or worker safety are removed.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions potentially affecting late seral closed canopy coniferous forest habitat in the analysis area are described in Table 4.

Past and current fuels reduction projects reduced canopy closure on a maximum of 88 acres. Recent wildfires have affected a maximum of 27 acres of late seral closed canopy coniferous forest. There are no planned future projects in the analysis area with the potential to affect late seral coniferous forest habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of the TRRP Project Alternative 2 will result in: (1) no change in acres of late seral closed canopy coniferous forest habitat, (2) a slight reduction in canopy closure on a maximum of 651 acres (This represents less than 6% of the late seral closed canopy coniferous habitat in the Middle Fork Tule River watershed), (3) a possible reduction in the number of large snags (>15" dbh) per acre if snags that pose an imminent safety hazard are removed.

Alternative 3

Direct and Indirect Effects to Habitat. For this alternative, treatment within late seral closed canopy coniferous forest habitat includes thinning and ladder fuel reduction on approximately 1,099 acres. Prescribed underburning only would occur on an additional 171 acres of late seral closed canopy coniferous forest habitat. Snags greater than 15 inches dbh would be retained unless they pose an imminent threat to personnel implementing treatments.

Implementation of Alternative 3 will result in: (1) no change in acres of late seral closed canopy coniferous forest habitat, (2) a slight reduction in canopy closure on a maximum of 1,270 acres, (3) a possible reduction in the number of large snags (>15" dbh) per acre if snags that pose an imminent safety hazard to the road or worker safety are removed.

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions potentially affecting late seral closed canopy coniferous forest habitat in the analysis area are described in Table 4.

Past and current fuels reduction projects reduced canopy closure on a maximum of 88 acres. Recent wildfires have affected a maximum of 27 acres of late seral closed canopy coniferous forest. There are no planned future projects in the analysis area with the potential to affect late seral coniferous forest habitat.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of the TRRP Project Alternative 3 will result in: (1) no change in acres of late seral closed canopy coniferous forest habitat, (2) a slight reduction in canopy closure on a maximum of 1,385 acres (This represents 12% of the late seral closed canopy coniferous habitat in the Middle Fork Tule River watershed), (3) a possible reduction in the number of large snags (>15" dbh) per acre if snags that pose an imminent safety hazard are removed.

Summary of Status and Trend at the Bioregional Scale

California spotted owl, American marten, and Northern flying squirrel. The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the California spotted owl, American marten, and northern flying squirrel; hence, the late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat effects analysis for the TRRP Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data. This information is drawn from the detailed information on habitat and population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Habitat Status and Trend. There are currently 1,006,923 acres of late seral closed canopy coniferous forest (ponderosa pine, Sierran mixed conifer, white fir, and red fir) habitat on National Forest System lands in the Sierra Nevada. Over the last two decades, the trend is slightly increasing (changing from 7% to 9% of the acres on National Forest System lands); since the early 2000s, the trend has been stable at 9%.

Population Status and Trend - California spotted owl. California spotted owls have been monitored in California and throughout the Sierra Nevada through general surveys, monitoring of nests and territorial birds, and demography studies (Verner et al. 1992; Gutierrez et al. 2008, 2009, 2010; USDA Forest Service 2001, 2004, 2006b; USFWS 2006; Sierra Nevada Research Center 2007, 2008, 2009, 2010). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although there may be

localized declines in population trend [e.g., localized decreases in “lambda” (estimated annual rate of population change)], the distribution of California spotted owl populations in the Sierra Nevada is stable.

Population Status and Trend – American marten. American martens have been monitored throughout the Sierra Nevada as part of general surveys and studies since 1996 (e.g., Zielinski et al. 2005, Moriarty 2009). Since 2002, American martens have been monitored on Sierra Nevada forests as part of the Sierra Nevada Forest Plan Amendment (SNFPA) monitoring plan (USDA Forest Service 2005, 2006b, 2007b, 2009, 2010b). Current data at the rangewide, California, and Sierra Nevada scales indicate that, although martens appear to be distributed throughout their historic range, their distribution has become fragmented in the southern Cascades and northern Sierra Nevada, particularly in Plumas County. The distribution appears to be continuous across high-elevation forests from Placer County south through the southern end of the Sierra Nevada, although detection rates have decreased in at least some localized areas (e.g., Sagehen Basin area of Nevada County).

Population Status and Trend – northern flying squirrel. Northern flying squirrels have been monitored in the Sierra Nevada at various sample locations by live-trapping, ear-tagging, camera surveys, snap-trapping, and radiotelemetry: 2002-present on the Plumas and Lassen National Forests (Sierra Nevada Research Center 2007, 2008, 2009, 2010), and 1958-2004 throughout the Sierra Nevada in various monitoring efforts and studies (see USDA Forest Service 2008, Table NOFLS-IV-1). These data indicate that northern flying squirrels continue to be present at these sample sites, and current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of northern flying squirrel populations in the Sierra Nevada is stable.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Trends.

California spotted owl. Since the direct, indirect, and cumulative effects of the alternatives of the TRRP Project will result in no change in late seral closed canopy coniferous forest habitat acres, a reduction in canopy closure and the average large snags per acre on less than 1% of the available habitat, this project will not alter the existing trend in the habitat, nor will it lead to a change in the distribution of California spotted owl across the Sierra Nevada bioregion.

American marten. Since the direct, indirect, and cumulative effects of the alternatives of the TRRP Project will result in no change in late seral closed canopy coniferous forest habitat acres, a reduction in canopy closure and the average large snags per acre on less than 1% of the available habitat, the TRRP Project will not alter the existing trend in the habitat, nor will it lead to a change in the distribution of American marten across the Sierra Nevada bioregion.

Northern flying squirrel. Since the direct, indirect, and cumulative effects of the alternatives of the TRRP Project will result in no change in late seral closed canopy coniferous forest habitat acres, a reduction in canopy closure and the average large snags per acre on less than 1% of the available habitat, the TRRP Project will not alter the existing trend in the habitat, nor will it lead to a change in the distribution of Northern flying squirrel across the Sierra Nevada bioregion.

Snags in Green Forest Ecosystem Component (Hairy woodpecker)

Habitat/Species Relationship.

The hairy woodpecker was selected as the MIS for the ecosystem component of snags in green forests. Medium (diameter breast height between 15 to 30 inches) and large (diameter breast height greater than 30 inches) snags are most important. The hairy woodpecker uses stands of large, mature trees and snags of sparse to intermediate density; cover is also provided by tree cavities (CDFG 2005). Mature timber and dead snags or trees of moderate to large size are apparently more important than tree species (Siegel and DeSante 1999).

Project-level Effects Analysis – Snags in Green Forest Ecosystem Component

Habitat Factor(s) for the Analysis: (1) Medium and Large (>15 inches dbh) snags per acre. (2) large (greater than 30 inches dbh) snags per acre.

Current Condition of the Habitat Factor(s) in the Project Area: It is estimated that there are currently approximately six medium and large snags (>15 inches dbh) per acre and two large (greater than 30 inches dbh) snags per acre in the TRRP project area.

Alternative 1

No Action

Under the No Action alternative there would be no changes in the number of snags per acre.

Alternatives 2 and 3

The Proposed Action

Direct and Indirect Effects to Habitat. Alternatives 2 and 3 propose to retain all snags greater than 15 inches dbh, unless the snags pose a safety hazard. Prescribed fire treatments in these alternatives may both create new snags and result in the loss of some existing snags with little impact expected on the overall number of snags per acre in the project area.

Implementation of Alternative 2 or Alternative 3 will result in: (1) a possible reduction in the average number of medium and large snags per acre if safety hazard snags are removed; (2) a possible reduction in the average number of large snags (>30" dbh) per acre if safety hazard snags are removed. The area from which safety hazards may be removed is greater in Alternative 3 (2,825 acres) than in Alternative 2 (1,407 acres).

Cumulative Effects to Habitat in the Analysis Area. Past, present, and reasonably foreseeable future actions potentially affecting late seral closed canopy coniferous forest habitat in the analysis area are described in Table 4.

Past and current fuels reduction projects only removed snags that were safety hazards. Recent wildfires have affected a maximum of 1,216 acres of forested habitat in Middle Fork Tule River

watershed (2% of forested habitat in this watershed). These fires both created and destroyed snags. There are no planned future projects in the analysis area with the potential to affect snags.

Cumulative Effects Conclusion: The direct, indirect, and cumulative effects of the TRRP Project Alternative 2 or Alternative 3 will result in: (1) a possible slight reduction in the average number of medium and large snags per acre if safety hazard snags are removed; (2) a possible slight reduction in the average number of large snags (>30" dbh) per acre if safety hazard snags are removed. Alternative 3 could potentially reduce the number of medium and large snags per acre more than Alternative 2 because a larger number of acres would be in the treatment area.

Summary of Hairy Woodpecker Status and Trend at the Bioregional Scale

The Sequoia NF LRMP (as amended by the SNF MIS Amendment) requires bioregional-scale habitat and distribution population monitoring for the hairy woodpecker; hence, the snag effects analysis for the TRRP Project must be informed by both habitat and distribution population monitoring data. The sections below summarize the habitat and distribution population status and trend data for the hairy woodpecker. This information is drawn from the detailed information on habitat and distribution population trends in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a), which is hereby incorporated by reference.

Ecosystem Component Status and Trend. The current average number of medium-sized and large-sized snags (≥ 15 " dbh, all decay classes) per acre across major coniferous and hardwood forest types (westside mixed conifer, ponderosa pine, white fir, productive hardwoods, red fir, eastside pine) in the Sierra Nevada ranges from 1.5 per acre in eastside pine to 9.1 per acre in white fir. In 2008, snags in these types ranged from 1.4 per acre in eastside pine to 8.3 per acre in white fir (USDA Forest Service 2008).

Data from the early-to-mid 2000s were compared with the current data to calculate the trend in total snags per acre by Regional forest type for the 10 Sierra Nevada national forests and indicate that, during this period, snags per acre increased within westside mixed conifer (+0.76), white fir (+2.66), productive hardwoods (+0.35), and red fir (+1.25) and decreased within ponderosa pine (-0.16) and eastside pine (-0.14).

Detailed information by forest type, snag size, and snag decay class can be found in the 2010 SNF Bioregional MIS Report (USDA Forest Service 2010a).

Population Status and Trend. Monitoring of hairy woodpeckers across the ten National Forests in the Sierra Nevada has been conducted since 2009 in partnership with PRBO Conservation Science, as part of a monitoring effort that also includes mountain quail, fox sparrows, and yellow warblers (USDA Forest Service 2010a, <http://data.prbo.org/partners/usfs/snmis/>). Hairy woodpeckers were detected on 15.1% of 1659 point counts (and 25.2% of 424 playback points) in 2009 and 16.7% of 2266 point counts (and 25.6% of 492 playback points) in 2010, with detections on all 10 national forests in both years. The average abundance (number of individuals recorded

on passive point count surveys) was 0.116 in 2009 and 0.107 in 2010. These data indicate that hairy woodpeckers continue to be distributed across the 10 Sierra Nevada National Forests. In addition, hairy woodpeckers continue to be monitored and surveyed in the Sierra Nevada at various sample locations by avian point counts and breeding bird survey protocols. These are summarized in the 2008 Bioregional Monitoring Report (USDA Forest Service 2008). Current data at the rangewide, California, and Sierra Nevada scales indicate that the distribution of hairy woodpecker populations in the Sierra Nevada is stable.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Hairy Woodpecker Trend.

Since the direct, indirect, and cumulative effects of the alternatives of the TRRP Project will result in a possible decrease in snags >15" dbh and >30" dbh per acre on less than 1% of the forested habitat available, this project will not alter the existing trend in snags, nor will it lead to a change in the distribution of hairy woodpecker across the Sierra Nevada bioregion.

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